Implementation of Quality Control Bulletin in Marketing Division in Achieving Targets (Case Study at PT KMI)

Ahmad Hipni[1], Jimmy SHP Sitanggang[2], R. M. Sugeng Rijadi[3]

[1,2]*Student, Magister Industrial Engineering, Mercu Buana University, Jakarta, Indonesia*
[3]*Lecturer, Magister Industrial Engineering, Mercu Buana University, Jakarta, Indonesia*

Abstract: **Circle Quality Control (QCC) is a small group of employees assembling to discuss controlling and improving product quality and work processes using concepts, tools and quality control techniques. PT KMI is a company engaged in manufacturing and service, using Circle Control Quality as an integral part of Total Quality Management to improve their performance in business competition. The purpose of this study is to determine Circle Control Quality in product sales at PT KMI in order to achieve the target. After using the PDCA using the Eight-Step Improvements, Seven Tools and QCC (Brainstorming Techniques), 5Why, 5W3H), the QCC team found that the main cause was lack of response to customer quotes, lack of salespeople and lack of consulting skills. Therefore, they need to make improvements to overcome the cause. After QCC, the team was unable to achieve a 100% average sales target (only 93%), but the average percentage of sales revenue increased by 17%. In conclusion, although the target has not yet been achieved, QCC implementation in this sub-section has been effectively implemented. This is reflected by the increase in percentage of sales targets and increase in sales revenue.**

Keywords: **Quality Control Bulletin (QCC) Check-Action (PDCA), Deming cycle and Stratification**

1. Introduction

In maintaining and developing the sustainability of a company to consider is how to influence customers with the ability to sell products or services offered to consumers. The sales and marketing department is the company's spearhead in achieving the company's sales target. To be able to implement optimum service to consumers, the company not only focuses on selling the product to consumers, but the company should also pay attention to the quality of internal sales and marketing force. An effort to improve the quality of performance that has a positive impact on the company is the application of the Quality Control Circle. Circle Quality Control is an improvement activity in all areas involving all employees and employees in performing enhancement activities within a company (Dianto, 2007). PT KMI is a company engaged in manufacturing and service. In the sales department, the company divides two divisions, namely product sales (manufacturing) subdivision and sales service sub-section (product service, machine maintenance contract, etc.). Both parts of sales contribute to the company in making sales. Products sold are usually orders (Work Order) that are not continuously carried out. During the service section, the company has made a contract of employment by some customers, so the targets earned can be said to be more certain and even increased. Therefore, a method is needed to achieve sales targets in order to enhance the company's global procurement by implementing Quality Control Bulletin (QCC) which is an integral part of Total Quality Management (Fukui, R. et al, 2003). The QCC implementation is expected to help solve the problems faced and increase success in the sub-sales section of the product. Product Sales Sub-sections form QCC groups and conduct weekly meeting activities to monitor QCC's progress for 1 month. The purpose of this study is to determine factors that can improve the performance of salespeople and efforts undertaken to achieve maximum targets by implementing QCC and checking the successful implementation of QCC in product sales sub-section

2. Literature review

A. Understand quality control circle

Circle Quality Control is a small group that continuously holds meetings to control and improve product quality, service, work processes, use of concepts, tools and quality control techniques. This group consists of 3-10 members from the same workshop / subdivision and supervisory group. During the meeting each member has the opportunity to give ideas of improvement (Fukui, R. et al, 2003). The QCC made continuous improvements from the input process to produce output using the Plan-Do-Check-Action (PDCA) concept, also known as the Deming Cycle (Chase, et al, 2001). When the problem is resolved, the group will continue to solve the next problem. QCC solves problems by collecting problem data from one or more activities, then analyzes using simple

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statistical tools such as diagrams, graphs, causal diagrams, Pareto diagrams and histograms. Problem solving techniques using Brainstorming, 5 Why the 5W3H Matrix and Matrix (What, When, Who, Where, When, Why, How, How Much, How Much). Here are some of the objectives of the Quality Control Circle:

- Contribute to the improvement and development of organizations or departments
- Overcoming the barrier of structural organization in developing the idea of improvement.
- Build positive attitudes in involving decision-making.
- Promote respect and a pleasant attitude at work
- Improve product quality and service.
- Improve the efficiency that supports the goals of the organization.
- Reduce inefficient costs and businesses in the long run.
- Improves efficiency and improves customer satisfaction.
- Customer satisfaction is the goal of competitiveness. (Gaikwad, et al., 2009)

In implementing the Quality Control Circle, the group uses the Eight Step Improvement (8 Step Improvement) method, Seven Troubleshooting Equipment (Seven Tools) and Brainstorming problem solving, 5Why Approach and 5W3H.

B. Deming cycle

Deming cycle is a continuous improvement model developed by Dr. Edward Deming is the pioneer of TQM. This cycle is divided into 4 main components and is divided into several steps, namely:

- Develop an upgrade plan (Plan)
- Running a created plan (Do)
- Check out the results achieved (Check)
- Make adjustment if needed (Action)

This model starts with determining goals then making plans for improvements and then implementing what has been planned. The results are analyzed and the cause is known. If the results are not as expected, they need to be modified by returning to the initial step so that the expected improvement in the original plan can be achieved.

C. Eight steps of repair and troubleshooting tool seven

Eight Steps for Repair (8 Step Improvements) is a troubleshooting or success-enhancing method based on a Review Action Plan cycle (PDCA). The eight corrective steps are as follows:

- Determine the problem / problem / success factor that must be improved / improved.
- Analyze the cause and effect.
- Find the root of the problem.
- Action planning.
- Implement this plan.
- Check results and effects.

- Make standardization.
- Prepare the next plan

The position of eight improvements in the PDCA cycle can be seen in the following figure. Seven Troubleshooting Methods are tools used in each level of improvement in classifying problems, displaying data to facilitate data analysis in problem solving and performance enhancements. The seven tools are:
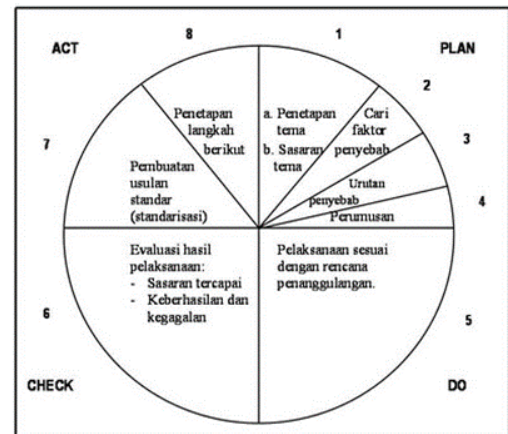

Fig. 1. Deming Cycle

1) Stratification

Stratification is a technique of grouping data into certain categories, so that data can clearly explain the problem so that conclusions are easily taken. Example: after collecting damaged data on printing products, confidential factors can be found in categories: operator, machine, paper size, time, date and method. Streaming category type:

- *Time:* year, month, week, day, etc.
- *Labor:* sections, sections, groups, etc.
- *Machining:* equipment, models, molds, etc.
- *Methods of work:* work procedure, speed, direction, etc.
- *Raw material:* raw material source, supplier, quantity, cost, etc.
- *Product:* country, unit, factory, service provider, etc.
- *Environment:* temperature, weather, humidity, etc. (Fukui, R., et al, 2003).

2) Pareto diagram

The Pareto diagram was created by Alfred Pareto (1848-1923) which carried out a thorough study on the distribution of wealth in Europe. He found that few people have a lot of money and many people have a little money. This uneven distribution of wealth is part of an economic theory. This figure classifies data in descending order from left to right *(Besterfield, 2009).* The figure below is an example of the number of complaints occurring in the production process. Where using the Pareto Chart can be identified by the type of complaints to be addressed first. Figure Pareto is a bar graph in which the items are arranged in descending order so that the most contributing

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factors can be identified. This figure is one of the statistical tools used in QCC *(Fukui, R., et al, 2003).*
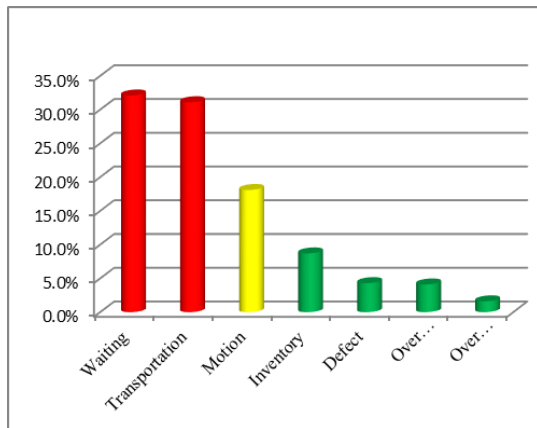

Fig. 2. Example of Pareto Diagrams

3) Cause and effect diagram

Cause and Effect Diagram is a diagram showing the relationship between cause and effect *(Gaspersz, 2000).* This diagram is created by *Dr. Kaoru Ishikawa in 1943* so it is also known as Diagram Ishikawa. Where this ishikawa diagram is one of the tools used to view the problem and the cause of the problem is the Fish Tone Figure *(Ahyari, 2013).* An example of Ishikawa diagram can be seen in Figure 3 below which explains how to find the source of damage to the centrifugal exhaust fan.

Fig. 3. Example of Ishikawa Diagram

4) Histogram

A histogram is a graph containing a distribution summary (spread or variation) of data. The histogram is a bar graph that displays the data frequency. The use of histogram charts has been widely used in statistics. The number of data points located within the range of values (class) is very easy to understand using a histogram. The frequency of data in each class is illustrated using a bar graph or column. For example the histogram image in Fig. 4.

5) Scatter diagram

Scatter Diagram or Stock Diagram is one of the tools of QC Seven Tools (7 Quality control tools) which functions to test how strong the relationship is between 2 (two) variables and

determine the type of relationship of 2 (two) variables whether Positive relationships, relationships Negative or no relationship at all. The shape of the Scatter Diagram is a graphical representation consisting of a set of points from the value of a pair of variables (Variables X and Variables Y). Scatter Diagram is often referred to as Scatter Chart, Scatter plot, Scattergram and Scatter graph.
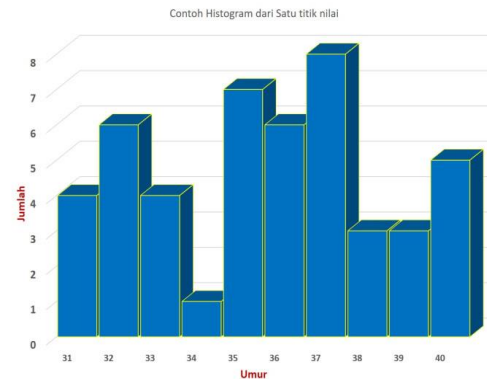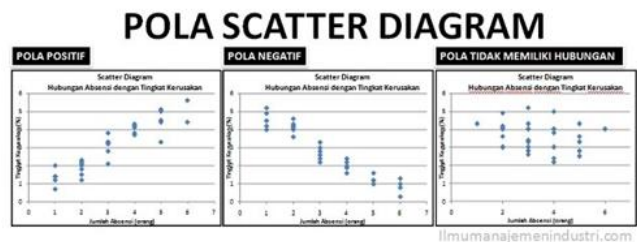

Fig. 4. Example of Histogram

Fig. 5. Example of Scatter Diagram

6) Graphic

The graph is a presentation of the data contained in the table displayed in the form of an image. In addition, graphics can also be interpreted as a combination of data in the form of numbers, letters, symbols, pictures, symbols, words, drawings, presented in the media with the purpose of providing an overview of the material conveyor to the recipient of the information. There are several types of charts and the most common are bar charts, line charts and pie charts. Example graphs can be seen in Figure 6 below.
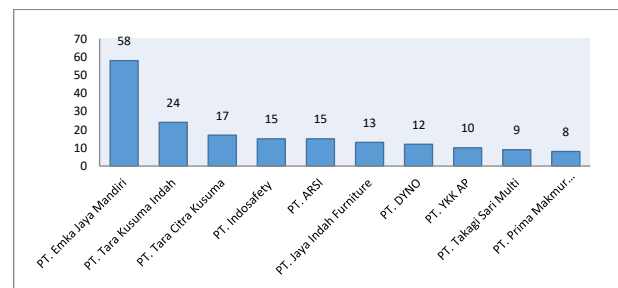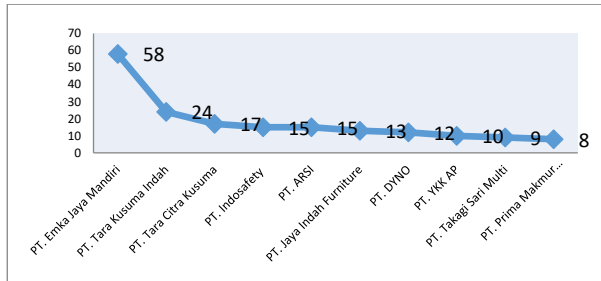

Fig. 6. Example of Graph bar Graphic

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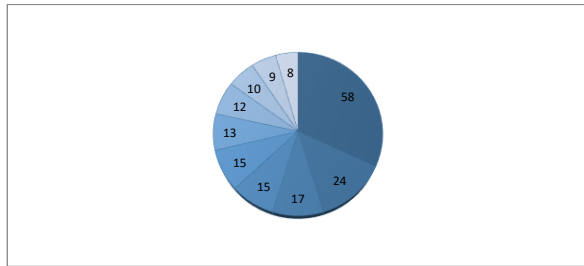
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Fig. 7. Line Chart

Fig. 8. Circle chart

1) Check Sheet

Check Sheets is the form used to collect data (Fukui, R., et al, 2003). The main purpose of the review paper is to ensure that the data is collected accurately by staff in handling problem-solving and handling (Besterfield, 2009). For example, check sheets can be seen in Fig. 7.

Fig. 9. Example of Check Sheet

Of the many different types of problem solving tools are not all used together, but problem solving tools can be used in conjunction with every problem encountered.

D. QCC technique

In QCC, in addition to using the above 7 Problem Solving Tools, to generate ideas and implement improved plans, the following techniques are used:

1) Brainstorming

Brainstorming is a method of collecting creative ideas in one group accurately, easily, easily and can involve many people (Dianto, 2007). Brainstorming is often used at various levels in

the QCC in each problem solving activity (Fukui, R., et al, 2003). Braintorming is an effective way to collect inputs and feedback from employees. In the brainstorming manager act as a catalyst / facilitator to support discussions between participants. Participants are encouraged to express every idea that is in their mind and every idea is considered valid (Tjiptono, 2003). Brainstorming can be used in connection with the following:

- Determine the likely cause of reduced company productivity
- Decide what productivity issues need to be resolved
- Team members feel free to talk and contribute ideas
- Capture a large number of alternative perceptions
- Creativity is the desired result
- Facilitators can effectively manage troops *(Gaspersz, 2000)*

2) 5 Why aproach

5 Why did Aproach ask five times to analyze something (Fukui, R., Et al, 2003). The concept of asking up to five times is used to find the root of the problem because the first sign of the problem is the symptom, not the cause. Ask why several times pointed us to the root of the problem, so that the actions found can eliminate this problem (Gasperzs, 2000). Example 8 below describes the concept of requesting five times.
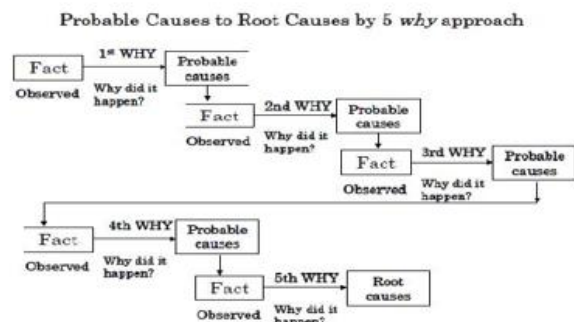

Fig. 10. Example of 5Why's Approach

3) 5W3H

5W3H is a matrix diagram that will be implemented in step 4 (Action Planning) in Eight-Step Repair. 5W3H stands for What, Why, Where, When, Who, How, How Much and How Many. Formula 5W3H to explain:

- *What:* What are the reasons to be overcome / support factors that will be enhanced
- *Why:* Why countermeasures / repairs are needed
- *Where:* Where is the place / place of repair
- *When:* When it starts and when it is expected to finish (timetable)
- *Who:* How to do it / how to do it
- *How much:* What budget is required
- *How much:* How many different types of tools are used *(Dianto, 2007)*

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3. Methodology

This study was conducted at sales department at PT. KMI, where sales departments form QCC groups consisting of 3 persons and 1 person acting as facilitators. The QCC aims to take steps to improve performance in the sales department in overcoming the factors that result in failure to achieve sales targets. Improvements and analysis steps are carried out in the PDCA cycle, using the 8-Step Improvements (8-Step Repair) and assisted with 7 Troubleshooting Tools (7 tools). Not all gadgets can be used but are tailored to the problems encountered. Although the problem solving techniques used are Brain Storming, 5 Why Approach and 5W3H Diagram Matrix. The most important part of QCC is understanding the data and facts. Without proper analysis and data collection, the group will understand the problem of solving the problem. Data is the required information expressed in numerals (numeric data) and not numbers (oral data). Data sources are quantitative data obtained from companies in the form of comparative data on sales targets on sales achievements in the last 2 years (preliminary data) and comparing data on sales targets to sales performance during QCC (final data). Qualitative data sources are ideas obtained when QCC groups perform Brain Storming and 5 Why Approach. The study was conducted for 3 months and checked weekly in the QCC group. Sales data, during the QCC period are the results that will be analyzed at the level of checking the results and effects. This decision will determine the success or failure of all planned actions, i.e. comparing data before and after QCC.

4. Analysis and results

A. Data Sebelum QCC

Before conducting QCC, sales data is required in the Product (manufacturing) and service subdivisions. Where the comparison of sales target and sales awareness is achieved in the previous 2 years, ie in 2017 (January 20187 until December 2017).

The data obtained are as follows:

Table. 1
Target and Realization of 2017

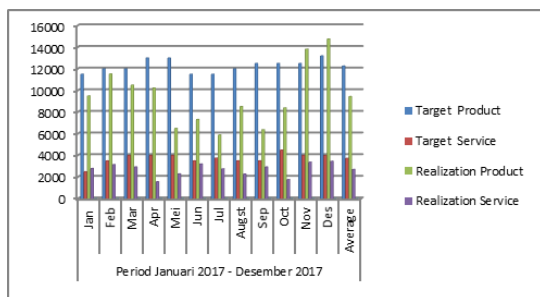|		Jan	Feb	Mar	Apr	Mei	Jun	Jul	Augst	Sep	Oct	Nov	Des	Average
Target	Product	11.500	12000	12.000	15000	15.000	11500	11.500	12000	12.500	12500	12.500	15200	12.287
	Service	2.500	3500	4.000	4000	4.000	3500	3.750	3500	3.500	4500	4.000	4000	3729.1.667
Realization	Product	9.500	11325	10.500	10255	6.500	7515	5.890	5525	6.575	8390	13.520	14755	9.445
	Service	2.800	3150	2.938	1875	2.094	3210	2.755	2281	2.951	1772	3.582	3459	2.711,25
%		55%	95%	84%	69%	52%	70%	57%	70%	55%	60%	104%	105%	76%

Fig. 10. Sales Chart for January - December 2017 before QCC

Table 2
Target 2017 Before QCC

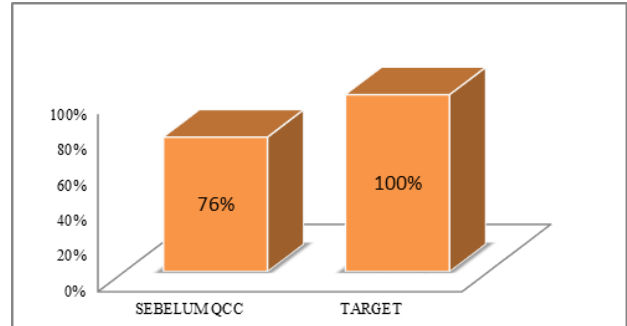| PERIODE 2017	SEBELUM QCC	TARGET
Jan - Des	76%	100%

Fig. 11. Sebelum QCC

From the data above, it can be seen that sales revenue from January to December 2017 did not reach sales targets set by the sales department. Therefore, it is necessary to know the cause of the problem not reaching the target of sales and efforts done to achieve the sales target. After the QCC team is formed in the sale of products and services, the PDCA cycle is started by performing eight stages of improvement as follows :

- *Tahap pertama :* Menetapkan persoalan / masalah / faktor keberhasilan yang harus diperbaiki / ditingkatkan Pada tahapan ini ditetapkan masalah yaitu tidak tercapainya target penjualan pada sub bagian produk (Manufacturing)dan sub bagian Jasa (service). Oleh karena itu diperlukannya mengambil langkah langkah di dalam pencapaian target penjualan pada sub bagian produk dan sub bagian jasa hingga mencapai target 100%.
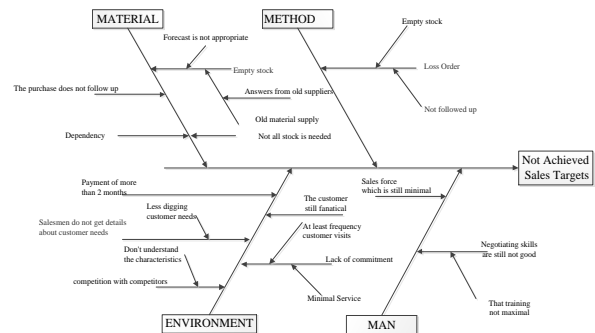

Fig. 12. Diagram Ishikawa

- *Tahap kedua :* Menganalisa sebab akibat Pada langkah ini dilakukan Brainstrorming, yaitu menggali ide-ide dari anggota QCC. Pada kegiatan Brainstorming, setiap anggota memberikan ide-ide secara bergiliran dan dipimpin oleh fasilitator yaitu Manager Marketing Proyek. Selama proses berlangsung semua ide dicatat

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dan anggota tidak boleh memberi tanggapan atau mengkoreksi setiap ide yang diberikan. Ada aturan tertentu dalam memberikan ide dan tidak diperbolehkan memberi ide menjurus kepada hal yang sensitif misalnya mengkritik kebijakan besaran gaji yang diterima karyawan. Adapun hasil Brainstorming tentang penyebab tidak tercapainya target penjualan adalah sebagai berikut.

Tabel 3
Brainstorming

BRAINSORMING			
1	Marketing ability to negotiate is less than optimal	11	Customer payments more than 2 month
2	In service and maintaining customers is not optimal	12	Purchasing is not followed up to the supplier
3	Empty stock	13	Loss Order
4	Time of procurement of goods is too long	14	Offers submitted to customers are not followed up
5	Sales forecasting is not according to customer needs	15	Customers are fanatical about certain brands
6	Less exploring customer needs	16	Salesmen do not get details about customer needs
7	The frequency of visits to customers is not optimal	17	Lack of Salesman personnel
8	Training to the marketing department is not maximal	18	Purchasing is too long to get information and answers from suppliers
9	Lack of commitment between marketing and customers	19	Dependence on Purchasing is only for 1-2 suppliers
10	Don't understand the characteristics of customers	20	Competition with competitors

- Third Stage: Find the root of the problem in the second stage, the cause of the problem was found that did not reach the sales target. The reason for not reaching sales goals is from a number of factors. These factors include, human (salesperson and marketing staff), material problems, methods used and their relationships with external factors. To be able to find out the most important reason, the root of the problem is sought by using the 5 Why, which asks for up to five times the cause of the problem. To determine the priority of improvement, a table of enforcement of root causes is made on the basis of importance, importance level and attendance or absence of quantitative data as a comparison before the QCC is conducted. Factors taken are just the root of the problem.

B. *Weight Details*

Urgent: 1-10 based on importance level (more importantly)
Immediately: 1 - 10 based on must be completed or suspended. From the table, the final value is sorted out of the largest and is made in the Pareto Chart. The highest value is the increased priority

Table 4

| No	Item	Problem	Urgent	Immediately	Total Value
14	N	Offers submitted to customers are not followed up	9	7	16
8	H	Training to the marketing department is not maximal	9	6	15
17	Q	Lack of Salesman personnel	8	7	15
2	B	In service and maintaining customers is not optimal	8	6	14
5	E	Sales forecasting is not according to customer needs	7	6	13
6	F	Less exploring customer needs	7	6	13
7	G	The frequency of visits to customers is not optimal	8	5	13
11	K	Customer payments more than 2 month	8	5	13
10	J	Don't understand the characteristics of customers	7	5	12
12	L	Purchasing is not followed up to the supplier	8	4	12
15	O	Customers are fanatical about certain brands	7	5	12
18	R	Purchasing is too long to get information and answers from suppliers	8	4	12
20	T	Competition with competitors	9	3	12
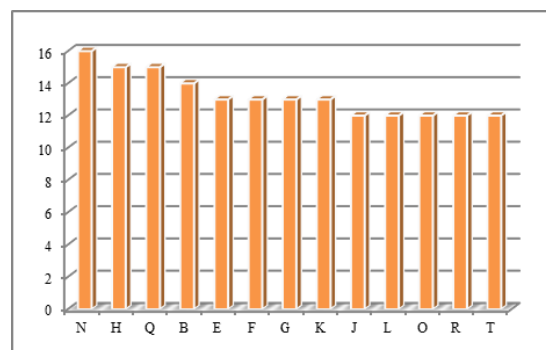
Fig. 12. Diagram Pareto

Dari gambar rajah Pareto di atas, dapat disimpulkan bahwa prioritas untuk peningkatan adalah seperti berikut:
- Offer sent to customer not followed (N)
- Training to the marketing department is not maximal (H)
- Shortage of salespeople (Q)

The fourth stage: Planning action Action planning is a business based on the root of the problem found. Using the 5W3H matrix, a corrective action plan on the three root issues specified in the third step we can see in the Pareto diagram above. Therefore, the root of this problem can be reaffirmed in the table below.

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Tabel 5
Matrik 5W3H

WHAT	WHY	HOW	WHO	WHEN	WHERE	HOW MANY	HOW MUCH
Offers submitted to customers are not followed up	Reducing loss orders	Follow-up offers that have been sent to customers	Marketing and sales department	every month	Manufacturing and services Sub division		

WHAT	WHY	HOW	WHO	WHEN	WHERE	HOW MANY	HOW MUCH
Training to the marketing department is not maximal	More understanding about negotiations in selling products and services sold	1. Hold nowledge training and product knowledge consulting.	Purchasing, Marketing, Sales	February to April	Product and service marketing sub division		
		2. Conduct weekly meetings in Marketing and sales to discuss the problems encountered					

WHAT	WHY	HOW	WHO	WHEN	WHERE	HOW MANY	HOW MUCH
Lack of Salesman personnel	more new customers and longer customers are retained	1. Propose the sale of salesmen to HRD	Section head marketing	Agustus	Product and service marketing sub division	3 Person	Sellery Section Head

- *Fifth stage:* Implement a plan From the planned actions that have been made, each member is aware of the agreed upon stage. Each member is responsible for carrying out a smooth plan according to their respective duties. Every action records its progress and is compelled to collect written evidence, for example the results of the follow-up offer, proof of follow-up on the proposed workforce added to HRD as scheduled, training evidence and attendance within the QCC period. Every week the QCC members hold regular meetings to discuss the progress and obstacles that occurred during the implementation of the plan.
- *Sixth rank:* Check results and effects after implementing the appropriate action plan, the next step is to examine the outcome and impact according to the objective of this QCC. Results and impacts can be seen in the table below:

Table 6
Target and Realization of 2018 (kg)

Table. 6
The Result After Performing QCC

BEFORE QCC IN 2017	AFTER QCC IN 2018	EVERY YEAR AVERAGE TARGET
76%	93%	100%
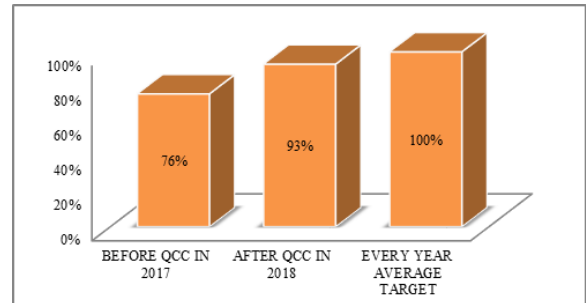
From the above tables and graphs it can be seen that the outcome after QCC was average sales during the QCC period from 12158 kg to 14802 kg. Average target achievement increased from 76% to 93% (up to 17%). QCC impact if analyzed against QCSDM is as follows:

- *Quality:* There was an average monthly sales increase from 12158 kg to 14802 kg or up 17% from 2017 before the QCC was conducted.
- *Cost:* Based on the company's revenue, the average monthly rate is Rp 118,980,000.
- *Security:* With the follow-up of each offer can reduce the risk of losing orders.
- *Delivery:* By adding staff to speed up the response, responding to bid requests and follow-ups are also faster.
- *Moral:* Marketing & Sales are becoming more confident as they have been given consultancy skills. In addition, staff additions make it easier to handle more customers.
- *Stage seven:* Make standardization In the previous stage, the results were better than before doing the QCC. Therefore the need to make standardization so that every employee in conducting operations (sales and marketing activities) in accordance with the improvements that have been made. For the QCC this time a Standard Operation Procedure (SOP) was made about follow-up offers to customers. This SOP was created and signed by all QCC members as proof of commitment to implement the SOP. In addition, an SOP was also made about the management of negotiating training, especially for newly recruited employees. While the addition of personnel is only carried out according to the workload needs
- *Eighth stage:* Prepare the next plan As the final stage and all stages have been carried out, the PDCA Cycle has also been carried out according to the stages of the

stage, the groups continue to make other improvements or so-called continuous improvements. Then in the eighth stage preparations are made to do stages one to the final stage as the next cycle cycle. The alternative theme chosen is the same theme (if the improvements made have not reached the goal so that it needs to be modified) or take from the root of the problem in the third stage above that has not been implemented, or if all the root problems above already corrected, the group looked for other new problems by brainstorming. This continues to be made to get significant changes in employee performance

5. Conclusion

Results of research conducted for one month can be summarized as follows:

- In this study, the root cause of the problem is not achieving sales targets due to lack of optimum customer follow-up, lack of sales force and lack of skills of salespeople and marketing staff so that training needs to be done.
- The corrective measures to be taken make the follow-up procedure of the customer's offer, suggesting the addition of salespeople to HRD and providing training skills training to salespeople and marketing staff.
- After the PDCA cycle is carried out with eight levels of improvement and the aid of seven problem solving tools, the result is a QCC team, the marketing sub-section can achieve an average monthly sales increase. The standardization results are made, so that in performing sales activities sales and sales force in this

subdivision must implement standard procedures. In this activity, Standard Operating Procedures are made regarding follow-up offers and consultancy training skills.

- Although it does not achieve an average achievement target of 100%, there is an increase in sales per month. Therefore, it needs improvement on the root of other problems to achieve 100% sales target.
- From the result of the above research can be concluded that Sub Marketing PT. KMI has successfully implemented the QCC effectively. This can be seen from improved performance gained after running QCC.

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